

## REMARKS

### I. Introduction

Applicant and his representative would thank Examiner Markoff for offering his courtesy and helpful suggestions during an interview on October 29, 2003. The present amendments and the following remarks incorporate the substance of that interview. This submission is intended, therefore, to supplement Applicant's September 30<sup>th</sup> response.

### II. Status of the Claims and Summary of Amendments Thereto

Claims 1 – 16 are pending. Claims 1, 2, 5, 6, 9, 10, 13, and 14 are amended in light of the Examiner's helpful suggestions, offered during the interview. Specifically, independent claims 1, 5, 9, and 13 are revised to replace the transitional phrase "comprising" with "consisting essentially of."

While Applicant believes that the previous versions of the independent claims plainly required the complexation of iron sulfide, he nonetheless has amended the claims, as suggested by the Examiner, to include an affirmative step of complexation. Applicant and the Examiner agreed that this change clarifies the claims but does not alter their scope.

Finally, the independent claims and some of their dependents are amended to remove the square brackets that previously appeared in the chemical name of the tetrakis (hydroxymethyl) phosphonium salts. This revision implements the Examiner's suggestion for conforming the claims to PTO requirements for indicating amended subject matter.

Having thus adopted the Examiner's suggestions, Applicant requests that the Examiner to enter the amendments, which do not introduce new matter.

### III. Outstanding Issues

#### A. Rejection of Claims Under § 102(e)

Claims 1 – 4 and 9 – 12 stand rejected as allegedly anticipated by U.S. patent No. 6,517,617 to Chartier *et al.* Previously, Applicant has emphasized that Chartier does not

teach iron complexation, as claimed. The Advisory Action, however, relies upon Chartier for an inherent teaching of this complexation feature, by virtue of Chartier's disclosure of a foam that contains water, tetrakis(hydroxymethyl)phosphonium sulfate, and a soluble ammonium salt.

According to the Examiner, Chartier discloses the same method steps, using the same composition as presently claimed, and therefore inherently discloses iron sulfide complexation. To the extent that his September 30<sup>th</sup> response may not have overcome this rejection, Applicant maintains the traversal of the rejection and, upon the Examiner's invitation, submits the supporting declaration that accompanies this response.

### **1. Chartier Does Not Inherently Disclose Iron Sulfide Complexation**

"A prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is *necessarily* present, or inherent, in the single anticipating reference." *Schering Corp. v. Geneva Pharmaceuticals*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) (emphasis supplied). "In general, a limitation or the entire invention is inherent and in the public domain if it is the 'natural result flowing from' the explicit disclosure of the prior art." *Id.* at 1379. "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991), *quoting with approval In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981).

By the standard enunciated in the foregoing case law, Chartier does not inherently anticipate, since the disclosed foam contains oxygen, which, in the context of the recited composition, would prevent iron sulfide complexation. Thus, the teachings of Chartier actually point away from the complexation feature of the claimed invention.

Implicit in the Examiner's analysis is the notion that the mere presence of the recited components, among others, in the foam of Chartier "necessarily" gives rise to iron sulfide complexation. The accompanying declaration demonstrates, however, that iron complexation is *not* a "natural result flowing from" the formation of the disclosed oxygen-impregnated

foam. That is to say, the presence of oxygen in the recited composition of water, tetrakis(hydroxymethyl)phosphonium sulfate, and a soluble ammonium salt would prevent the composition from complexing iron sulfide.

As the declarant explains, combining water, tetrakis(hydroxymethyl)phosphonium sulfate, and a soluble ammonium salt gives rise to tris(hydroxymethyl)phosphine ("TRIS"), which in turn engenders the complexation of iron (II). The presence of oxygen, particularly in the quantities of the aerated foam disclosed by Chartier, would rapidly decompose TRIS by oxidation, rendering the foam incapable of complexing iron sulfide.

In light of the foregoing, it is apparent that Chartier does not anticipate by inherency because the disclosed foam does not necessarily complex iron sulfide.

## **2. Oxygen Materially Affects Iron Complexation**

Consistent with this understanding, the present claims require that the composition employed in the inventive methods "consist essentially of" water, tetrakis(hydroxymethyl)phosphonium sulfate, and a soluble ammonium salt. "The phrase 'consisting essentially of' in a patent claim has long been understood to permit inclusion of components not listed in the claim, provided that they do not 'materially affect the basic and novel properties of the invention.'" *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1354 (Fed.Cir. 1998); *In re Janakirama-Rao*, 50 C.C.P.A. 1312, 317 F.2d 951, 954 (CCPA 1963).

In the present instance, the discussion above and the accompanying declaration plainly demonstrate that the presence of oxygen in the recited composition would materially affect (indeed, would negate) the iron-complexation ability of the composition, thereby certainly affecting this "basic and novel" property of the claimed methods. The foams of Chartier contain 90 – 95% air (see columns 7-8 and claim 1). Consequently, the claims exclude the disclosed composition.

For all of these reasons, Applicant respectfully submits that Chartier does not anticipate the present invention. Accordingly, Applicant courteously requests the Examiner to reconsider and withdraw the rejection.

**B. Rejection of Claims Under 35 U.S.C. § 103(a)**

Claims 1 – 16 stand rejected over WO 00/21892 (“Odell”) in view of U.S. patent No. 5,753,180 to Burger (“Burger”). Applicant has argued at considerable length against this rejection. *See, e.g.*, Response dated September 30, 2003. As Applicant urged during the interview, this rejection is maintained primarily upon two flawed premises.

First, Odell and Burger both allegedly pertain to the treatment of oil and dry gas pipelines. *See* Advisory Action at points 3 and 5. Second, Burger allegedly teaches that it is conventional in the art to treat iron sulfide deposits with a biocide. *Id.* Consistent with the Examiner Markoff’s impressions during the interview, Applicant maintains that the references, alone or in combination with each other, do not render the claimed methods obvious.

**1. Odell and Burger Are Concerned Solely with *Aqueous* Systems**

Odell pertains only to aqueous systems, not to oil and dry gas pipelines. As Applicant pointed out in the response dated September 30, 2003, Odell is replete with references to applying THPS (and its related salts) to water systems such as oil field formation waters. There is not a single teaching or suggestion in Odell that the disclosed method or a composition of THPS could be used in an oil or dry gas pipeline, which are not aqueous systems.

Similarly, Burger is limited to the biocidal treatment of aqueous systems, such as seawater, produced waters, transported waters, and water used for injection wells. *See* response dated September 30, 2003 at page 7 for a full discussion. There is absolutely no teaching or suggestion whatsoever that the disclosed method and biocide could be used to treat oil or dry gas pipelines.

No permutation of Odell and Burger address even remotely how one of ordinary skill could remove iron sulfide from an oil or dry gas pipeline. For at least this reason, the Odell/Burger combination does not undercut the present claims.

**2. Burger Does Not Teach or Suggest that a Biocide Can Remove Iron Sulfide**

Nowhere in the reference is there support for the remarkable proposition, advanced by a previous examiner, that Burger teaches the removal of iron sulfide from pipelines by treatment with a biocide. As Examiner Markoff recognized at the interview, Burger discloses the removal of *sulfate-reducing bacteria* by pigging, combined with the treatment of a biocide. See column 2, lines 66-67, and column 3, lines 1-11.

Since killing such bacteria with a biocide can reduce H<sub>2</sub>S production and, thereby, can reduce new iron sulfide buildup, the Burger methodology may be said to control the formation of iron sulfide, albeit in *aqueous* systems, as discussed above. The plain disclosure of Burger thus is quite distinct from the “convention” of using a biocide to remove iron sulfide from an oil or dry gas pipeline, as the Examiner understands the reference to teach.

Burger does not even mention THPS or its related salts. The previous Examiner relied upon non-prior art Fidoe (WO 02/08127), however, for its teaching that THPS “is notoriously well known in the art” as a biocide and iron sulfide-deposit solubilizer. See Advisory Action at point 3. Yet Fidoe, like Odell and Burger, does not pertain to oil or dry gas pipeline applications. See Fidoe at page 2, line 10 (“oil well”) and line 17 (“oil field water”). Thus, a reliance upon Fidoe merely highlights the non-obviousness of Applicant’s invention: absent Applicant’s disclosure, no one knew that THPS (or its related chloride salt) could be used in an oil or dry gas pipeline to remove iron sulfide deposits.

In summary, the combination of Odell and Burger does not suggest all the elements of the claimed invention. Even if the references could be combined to do so, a person of ordinary skill in the art would not have been motivated to combine the teachings of the references, because neither Burger nor any other of the cited references suggests that a biocide, much less THPS (or its related chloride salt), can be used to solubilize iron sulfide in oil and dry gas pipelines. Applicant respectfully submits, therefore, that the Odell/Burger combination does not render obvious the inventive methods. Applicant likewise requests the Examiner to reconsider and withdraw this rejection.

**IV. Conclusion**

Having complied with Examiner Markoff's helpful suggestions and satisfactorily addressed the outstanding rejections, Applicant believes that the present application is now in condition for allowance and earnestly seeks early notice to that effect. Should the Examiner believe that a further interview would advance the prosecution of the present application, the Examiner is invited to contact the undersigned by telephone.

Respectfully submitted,

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The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.